DOCUMENT RESUME

ED 445 518 FL 026 389

AUTHOR	Chamot, Anna Uhl; El-Dinary, Pamela Beard
TITLE	Children's Learning Strategies in Language Immersion Classrooms.
INSTITUTION	National Capital Language Resource Center, Washington, DC.
SPONS AGENCY	Department of Education, Washington, DC.
PUB DATE	2000-00-00
NOTE	33p.; Funded by the U.S. Department of Education, International Research and Studies Program. National Capital Language Resource Center was formerly the National Foreign Language Resource Center.
PUB TYPE	Reports - Research (143)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	Classroom Techniques; Cognitive Development; *Cognitive Style; Elementary Education; *Immersion Programs; *Learning Strategies; Learning Theories; Protocol Analysis; Second Language Instruction; *Second Language Learning; Teaching Methods; Thinking Skills
IDENTIFIERS	Two Way Bilingual Education

ABSTRACT

This paper reports on an investigation of learning strategy applications in elementary foreign language immersion classrooms. The focus of the paper is on identifying strategies more and less effective learners use for classroom reading and writing tasks in the target language. Think-aloud data from third grade and fourth grade students were quantified and compared through matched pair t-tests. Although there were no differences in total strategies used by high- and low-rated students, there were some differences in the types of strategies relied on when reading. Low students used a greater proportion of phonetic decoding than high students. High students used a higher proportion of background-knowledge strategies (including inferences, predictions, and elaborations) than did low students. Potential differences in the quality and flexibility of students' strategies use are expected. Conclusions include the following: good learners may better monitor and adapt strategies, whereas poor learners cling to ineffective strategies; effective learners recognized the need for strategic flexibility; less effective learners may get bogged down in details, whereas more effective learners focus on the task as a whole. A "Coding Reference/Index"; a "Sample Tally Sheet for Recording Strategy Codes"; "Descriptive Profile" form; and a "General Information/Global Impressions" sheet are appended. 25 references. (Author/KFT)

ENTIRE DOCUMENT:
POOR PRINT QUALITY

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 445 518

Children's Learning Strategies in Language Immersion Classrooms

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Anna Uhl Chamot
Pamela Beard El-Dinary
Language Research Projects[1]
Georgetown University

Abstract

This paper reports on an investigation of learning strategy applications in elementary foreign language immersion classrooms. The focus of this paper is on identifying strategies more- and less-effective learners use for classroom reading and writing tasks in the target language. Think-aloud data from third-grade and fourth-grade students were quantified and compared through matched-pairs t-tests. Although there were no differences in total strategies used by high-rated and low-rated students, there were some differences in the types of strategies students relied on when reading. Low students used a greater proportion of phonetic decoding than high students. High students used a greater proportion of background-knowledge strategies (including inferences, predictions, and elaborations) than did low students. Potential differences in the quality and flexibility of students' strategies use are explored.

[1] This research is conducted by the Georgetown University Center for Applied Linguistics National Foreign Language Resource Center and through an additional grant from the International Research and Studies Program of the U.S. Department of Education. The views, opinions, and findings reported are those of the author and should not be construed as an official Department of Education position, policy, or decision unless so designated by other official documentation.

BEST COPY AVAILABLE

FL026389

Children's Learning Strategies in Language Immersion Classrooms

Learning strategies are methods or techniques that individuals use to improve their comprehension, learning, and retention of information (Weinstein and Mayer, 1986). Strategies are typically described as mental procedures that assist learning, but they can also include overt activities. A major contribution of research on language learning strategies has been to identify the strategies used by good language learners and to determine how these strategies can be conveyed to others (Hosenfeld, Arnold, Kirchofer, Laciura, & Wilson, 1981; O'Malley, Chamot, Stewner-Manzanares, Küpper, & Russo, 1985a, 1985b; Naiman, Fröhlich, Stern, & Todesco, 1978; Rubin, 1975). Extensive research has described and classified language learning strategies among students of English as a second language and students learning French, Japanese, Spanish, and Russian as foreign languages at the secondary and college levels (e.g., Chamot, Barnhardt, El-Dinary, Carbonaro, & Robbins, 1993; O'Malley & Chamot, 1990; Oxford, 1990; Rubin, Quinn, & Enos, 1988; Thompson & Rubin, 1993).

The present study extends this work on learning strategies to younger foreign language learners in immersion settings. The study uses think-aloud techniques to reveal strategic differences between more and less successful learners for the kinds of language tasks they experience in their immersion classrooms.

Language immersion programs are characterized by a focus on learning school subjects through the medium of a second language, rather than an exclusive focus on the language being learned. Children in immersion programs typically begin in kindergarten or first grade and continue through the elementary years. In partial immersion programs, some subjects are taught in

BEST COPY AVAILABLE

the target language and others in English, while total immersion programs teach initial literacy and mathematical skills as well as other subjects through the second language. In total immersion programs literacy in children's native language is typically introduced in second grade or later, and the curriculum may gradually shift to a balance of foreign and native language instruction (Curtain & Pesola, 1988; Met & Galloway, 1992).

Immersion programs in French were initiated in Canada in the 1960's, and in Spanish in the United States in the early 1970's (Campbell, 1984; Lambert & Tucker, 1972). More than two decades of research indicate that this approach is highly effective in developing an impressive level of foreign language proficiency in English-speaking children and grade-level or above achievement in English skills and content subjects (Curtain & Pesola, 1988; Genesee, 1987; Swain, 1984). The thrust of this research has been on the linguistic and academic products of immersion education rather than on the teaching and learning processes involved (Bernhardt, 1992). Thus, while we know the levels of achievement attained by children in language immersion programs, we have little knowledge about how they reach those achievement levels. In particular, the learning strategies used by children in foreign language immersion settings and the effects of learning strategy instruction in such settings remains largely unexamined.

In contrast, the role of learning strategies has been extensively studied with children learning in native language contexts and, to a lesser degree, with older language learners. Considerable success has been achieved in teaching elementary school children to use learning strategies in first language contexts (see Pressley & El-Dinary, 1993; Pressley, El-Dinary, Gaskins, et al., 1992), but research in second language elementary school contexts has focused on the description of learning strategies used in English by bilingual students (Padrón &

BEST COPY AVAILABLE

Waxman, 1988). Research with older students, however, has shown that effective language learners use strategies more appropriately than less-effective language learners, and that learning strategies can be taught to both secondary and college level second language students (Chamot, 1993; Chamot & Küpper, 1989; Cohen & Aphek, 1981; O'Malley & Chamot, 1990; Rubin, Quinn, & Enos, 1988; Thompson & Rubin, 1993). The application of this research to younger students in language immersion programs holds promise for developing an understanding of their learning processes and ways for helping them learn even more effectively.

The study reported here is building on previous work conducted by the research team at the Georgetown University/Center for Applied Linguistics National Foreign Language Resource Center that has investigated learning strategies in high school Japanese, Russian, and Spanish classrooms (Chamot, Barnhardt, El-Dinary, Carbonaro, & Robbins, 1993; Chamot, Robbins, & El-Dinary, 1993). Research questions addressed over the three years of this investigation include the following: (1) Which learning strategies are used by more-effective and less-effective learners in elementary foreign language immersion programs? (2) Do these strategies change over time, and if so, how? (3) Do students who use learning strategies more frequently perceive themselves as more-effective language learners? (4) Are students who use learning strategies more frequently also rated higher in language proficiency? (5) What are the differences in strategy use across the languages studied? This paper focuses on the first research question, identifying the learning strategies used by elementary school foreign language immersion students and comparing the strategies used by more- and less-effective language learners.

Study Participants and Context

Three immersion programs in the Washington, DC suburbs are participating in the study, and include 5 French immersion classrooms, 3 Spanish immersion classrooms, and 6 Japanese immersion classrooms. The grade levels range from kindergarten through grade six, though not every grade level is included for each of the three languages, since teachers are participating on a voluntary basis. The French and Spanish programs are total immersion, in which all subjects are taught in the target language for most of the school day. The Japanese program is a partial immersion program in which students receive instruction in Japanese in mathematics, science, and health for half of each day, and then spend the remainder of the day in English instruction for subjects such as language arts and social studies.

Most of the students in these programs come from native English-speaking families. Only a very few children in the Japanese program have a Japanese-speaking parent. In the Spanish program, a somewhat larger number of children have a Spanish-speaking parent or parents. In the French program the majority of students also have native English-speaking backgrounds, but a number of Francophone African and Haitian students are enrolled in this program as well.

Twelve of the 14 participating immersion teachers are native speakers of the target language, and the two remaining are near-native speakers. All hold either permanent or provisional elementary teaching certificates for the states in which they teach, and many also have teaching credentials and experience from their native countries. Participating teachers have all received considerable preparation and professional development in immersion philosophy and methodology through inservice workshops and/or university course work. The teachers express enthusiasm for immersion education, are rigorous in providing instruction virtually exclusively in

BEST COPY AVAILABLE

the target language, and devote considerable efforts to developing appropriate materials and techniques to assisting their students to learn subject matter through the medium of a foreign language.

Procedures

Identifying subjects. Researchers worked with teachers to develop criteria for rating their students as language learners. These rating scales were used to identify a random sample of highly effective and less-effective learners in each classroom. In the spring of each year of the project, think-aloud interviews were conducted with the sample of students thus identified, with students being followed over time. A minimum of 3 highly-effective and 3 less-effective students in each classroom participated in the think-aloud interviews.[2] Where possible, over-sampling took place as a precaution against possible attrition of students who would be followed in the longitudinal aspect of the study.

Think-aloud interviews. Think-aloud procedures were designed to capture children's reported mental processing as they worked on typical school tasks. Researchers worked with teachers to identify appropriate reading and writing tasks for the think-aloud interviews of students in their classrooms. These tasks were to contain new and somewhat challenging content, but were to be structured like familiar classroom tasks. Teachers introduced the concept of thinking aloud to their classes and explained the purpose of the research.

---

[2] The 1995 Spanish third-grade class included very few students rated low by the teacher or by the project's Spanish specialist. The class was an unusual population with over 70% of the students classified as gifted. Because of this special situation, third grade students are being added in the final year to fill these slots (i.e., students who have not already participated in the study as second graders).

BEST COPY AVAILABLE

A team of researchers participated in developing a detailed interview guide for data collection. After studying the interview guide, interviewers participated in training sessions that included watching models of think-aloud interviewing and receiving coaching as they conducted mock interviews with the script.

Individual student interviews were then conducted with each student in the sample. The researcher first explained the purpose of the interview in both the target language and English, telling students they would be asked to describe their thoughts as they worked on the tasks. The remainder of the interview was conducted in the target language (except with kindergarten students), but researchers assured children that they could describe their thinking in either language or in a mixture of the languages.

After explaining how to think aloud, the interviewer modeled thinking aloud while solving a picture puzzle; the interviewer asked the student to restate what the interviewer had said, praising students for identifying the verbalized thinking. At the end of this task (and each subsequent task), the interviewer gave the student a small prize. The researcher then asked the student to try thinking aloud. For this practice, students worked through a logic problem and the interviewer prompted with questions like, "What are you thinking now? How did you figure that out?" Similar prompts were used for the data collection tasks, about 10 minutes of reading and 10 minutes of writing. For the reading task, children read excerpts of level-appropriate authentic children's literature in the second language. For the writing task, students selected a picture and were asked to write a story about it in the target language. For all think-aloud tasks, interviewers frequently gave open-ended prompts to encourage thinking aloud, they also requested clarification and elaboration of students' comments.

BEST COPY AVAILABLE

Analyses of think-alouds. Think-aloud interviews were audio-taped, then transcribed verbatim. A team of researchers from a variety of backgrounds, some of whom were experienced with a variety of learning strategies models, analyzed data using a grounded theory approach (e.g., Strauss & Corbin, 1990). Researchers independently studied subsets of the data across languages, grades, and ability levels to develop a coding scheme of strategies. Through discussion, the researchers' analyses were integrated into a single coding scheme, which has been revised as necessary with further analysis. The coding scheme is in a table that identifies both metacognitive and cognitive strategies and includes an abbreviated code with a strategy term, description, and illustrative transcript excerpts for each code. Appendix A includes an outline of the coding scheme categories and their organization, as well as a sample page from the table.

Researchers worked in pairs to apply the coding scheme back to the think-aloud data, to describe the strategies use patterns of each student. For several classroom sets of the data, both researchers first completely coded a transcript independently, by writing the appropriate abbreviated analysis codes in the margins of transcripts. The research pair them met to compare codes, calculating percentage of agreement for reliability and resolving differences through discussion. For the data presented here, coders agreed on the specific strategy code 79% of the time; an additional 6% of strategies were coded within the same level-2 category (see the hierarchy in the coding scheme, Appendix A). Thus, for the level-2 categories reported here, inter-rater agreement was 85%.

The pairs of researchers recorded tallies of their codes (see sample tally sheet in Appendix B), resulting in a quantified description of the student's patterns of strategies use. Qualitative profiles of each student also were developed, again by a pair of researchers, in order to capture

BEST COPY AVAILABLE

the most prominent and consistent features of each student's think-aloud interview (see Appendix C).

High/low comparisons. Quantitative data on the strategies use of high-rated and low-rated students were compared using a matched-pairs dependent t-test. Pairs were matched for language and grade level. Students who spoke the target language at home or who were identified as having learning disabilities have been removed from the matched-pairs analysis. The analyses reported here are based on a partial set of the data, which includes eight pairs of students from the 1995 third and fourth grades, with the exception of Spanish grade 3 (see earlier footnote); remaining grades will be analyzed when they are completely coded, and appropriate pairs will be filled in where students were excluded.

Separate analyses were performed for the reading and writing tasks. Analyses presented here focus mostly on on-line strategies--that is, strategies the student applied to the task, rather than strategies they said they "typically use." Overall measures of strategy use were calculated by taking raw totals of all strategies, of metacognitive and cognitive strategies, and of comments indicating metacognitive awareness rather than use of a particular strategy (e.g., comments about why or when the strategy is useful, about the students' learning preferences, and evaluative comments about oneself as a learner). Strategies also were analyzed according to categories from the coding scheme ("level-2" categories, see Appendix A). The sum of on-line strategies in a level-2 category was divided by the total number of on-line strategies used for the task; this yielded a proportion indicating how often a certain type of strategy was used in reference to the other strategies. Comparisons of proportions allowed us

to examine relative use of strategies, rather than just comparing raw numbers of strategies used. This also helped control for differences in student verbosity.

Results and Discussion

Throughout the results section, supporting think-aloud excerpts are included. These excerpts are translated into English for interviews conducted in target language. Students are identified by language and grade level, and often by rating (i.e., J1H = Japanese first-grade student, rated high).

Coding scheme. One of the greatest accomplishments of the study was the development of a coding scheme that identifies the types of strategies used by immersion students (see Appendix A). The analysis of transcripts revealed that students as young as first grade were often able to describe their thoughts and approaches to tasks in rich detail, frequently in the target language but sometimes in English. For example:

I: Okay. You remember the pictures? Okay, is there anything else you were thinking [while listening to the story]?

J1L: Uh, just a couple of math problems.

I: Math problems? You were thinking of math while you listened?

J1L: Uh-huh.... I have one half of my brain that does thinking of stories and the other half does math problems.

Students also often had thoughtful responses and detailed descriptions about when and why they think in their second language or in English.

F6H: I think in both [languages]...because I have like a picture in my head, but I think in French, but...my vocabulary was born in English, so..that's why I translate into English.

As the coding scheme in Appendix A shows, analyses of the transcripts revealed a rich and extensive variety of strategies and processes that are used in different ways by immersion students. Each type of strategy--such as planning, monitoring, and using language knowledge--had a variety of manifestations, as indicated in the sub-categories of these strategies. Although a few strategies are used mainly at lower or upper grades or for a specific language, so far most seem to be used across grades and languages. The following excerpts illustrate the variety of strategies and their use across languages and grades:

S4: I try to look at the title to see what it is like.... I think that it is recycling...."From Iron to Silverware" because it is from one thing to another, that it says that it converts to something else....

J4: Sometimes, I picture what they said, a picture like the character's actually saying it, or like a narrator telling...what's going on and everything.

J2: [When I don't know a word] I read the first data. I think about what the first data says. In this case, 'age' is the same as the first part of agemasu.

F6: I think that this will be the easiest [picture] to make a story about... there was another picture I liked a lot...but I could not think of a story I could use.

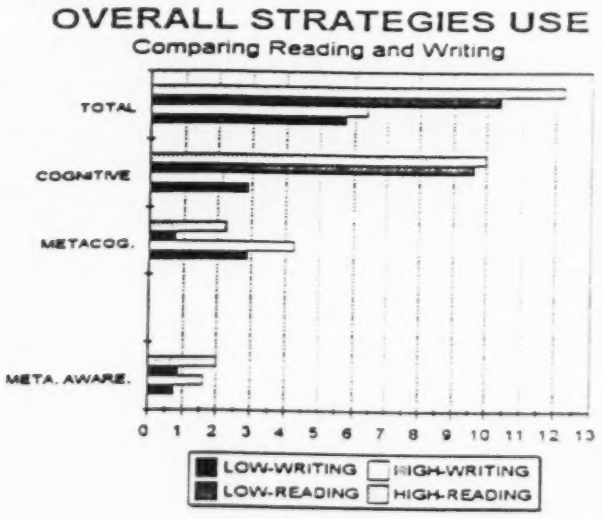
S2: [I'm thinking about] what I can use to organize my ideas.

J2: When I have to spell them but I don't know... sometimes I just...like...pretend those letters are in front of my face...in the words. ...It helps me.

F6: I think about the stories I have heard & then those that happen in my life & then those that happen in the papers & then I use my imagination to think of different or creative things...because I don't always like stories that are true to life.

High-low comparisons: overall strategies use. Strategies from the coding scheme were quantified as described in the procedures section. There were no statistically significant differences in overall measures of strategies use or metacognitive awareness statements for either reading or writing (see Figure 1). However differences in the proportions of metacognitive and cognitive strategies approached significance in reading, suggesting that high-rated students may have used a greater proportion of metacognitive strategies than low-rated students (21% versus 7%, t_7=2.18, p=.06), whereas low students may have used a greater proportion of cognitive strategies than high students (92% versus 78%, t_7=2.18, p=.06).

Figure 1



BEST COPY AVAILABLE

High-low comparisons: relative use of strategy types. Figures 2 and 3 compare high and low students according to proportions of strategy types used on each task. On the reading task (Figure 2), matched-pairs dependent t-tests revealed two main differences between high and low students. The greatest difference was in the use of phonetic decoding (t_7= -4 69, p=.002). Low students relied extensively on decoding, which comprised 44% of their strategies use. In contrast, decoding represented only 17% of high students' strategies use. The other significant difference was found for strategies using general background knowledge (the combination of inferences, predictions, and elaborations). Background-knowledge strategies represented 51% of high-rated students' strategies, but only 35% of low-rated students' strategies (t_7= 3 37, p=.012). The individual strategies--inferences, predictions, and elaborations--were not significant.

Figure 2

READING STRATEGIES USE

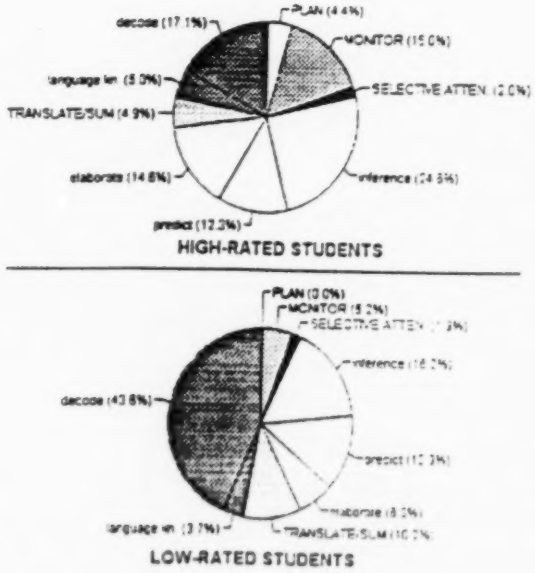
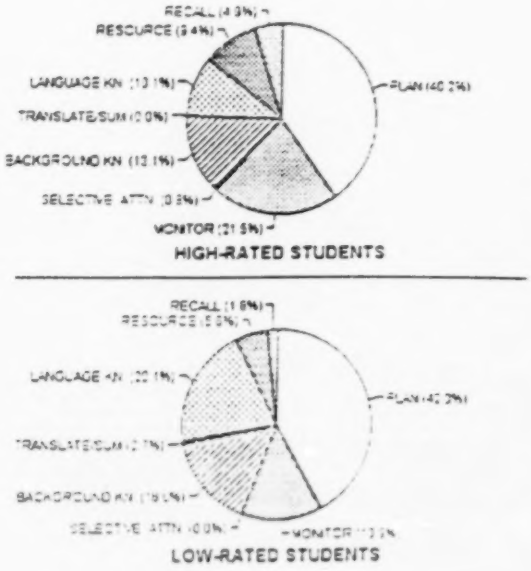


Figure 3

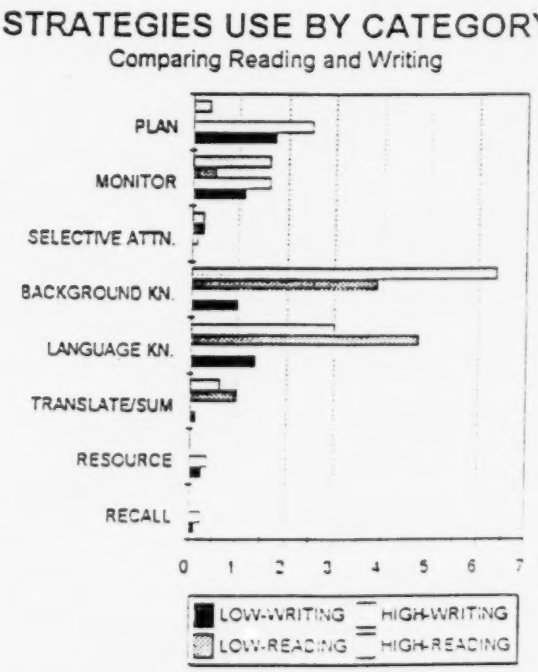
WRITING STRATEGIES USE



BEST COPY AVAILABLE

As Figure 3 indicates, there were no significant differences between high and low students for strategies used for writing. When reading and writing are compared, both high and low students used about double the number of strategies for reading as they did for writing (see Figure 1). As Figure 4 indicates, the strategy differences were especially strong for applying background knowledge and language knowledge strategies. Background knowledge strategies such as making inferences, predictions, and elaborations can help comprehension but probably play little role in language production (in this case, writing). Both high and low students also seemed to rely on language strategies, such as decoding and deductions, to unlock the meanings of words more than to assist in recalling or spelling words. The only strategy type that students used more for writing than for reading was planning strategies. Although several planning strategies, such as previewing text, can be appropriate for reading, students seemed not to rely on these strategies as much as writing planning strategies, like chosing a topic because it is familiar.

Figure 4



BEST COPY AVAILABLE

The strategies comparisons made in the preceding paragraphs represent "on-line" strategies use--strategies the students were reporting for use on the think-aloud task itself. Students also offered some retrospective reports of strategies they typically use for certain problems. Although sometimes students offered retrospective reports on their own, more often they were in response to specific interviewer probes, such as "What do you usually do when you come to a word you do not know?" (see Appendix C for other probes). There were no significant differences in retrospective reporting, either overall or when divided by strategy type, between high and low students. Mean frequencies of retrospective reports ranged from 0 to 2 for each strategy type.

Qualitative findings regarding strategies use. Although there were few differences in the relative frequency of strategies use, that is not to suggest that more-effective and less-effective learners use strategies the same way. Rather, extensive reviews of the transcripts suggest that there are differences between these groups, and that the important differences are often difficult to quantify. That is, the appropriateness of the strategies used for a particular task or problem may be more important in effective second language processing than the frequency or even the types of strategies used. Several emerging qualitative conclusions about strategies use are described in the following paragraphs.

For example, qualitative analyses of think-aloud transcripts suggest that effective learners are more flexible with their repertoire of strategies, and more effective at monitoring and adapting their strategies. In contrast, less-effective learners are more likely to cling to ineffective strategies either through unawareness of their ineffectiveness or inability to adapt strategies to the task

BEST COPY AVAILABLE

demands. For example, after not recognizing a word, a high-rated student explains what she does when she doesn't know a word in French.)

F5H: That depends; if I think that this word is important enough, I look it up in the dictionary, but if I can maybe understand the sentence and it's clear enough, I don't look it up in the dictionary, and I deliberately forget about it.

A low-rated student (J5L) responded to the same prompt by listing people who could help her, including her mother, father, grandmother, and finally a pet guinea pig. This student's approach focused on one strategy--seeking help from other people.

Another example regarding flexibility is that low students often seemed to rely on single strategies, particularly visual cues, rather than using multiple cues like the effective students.

Low students often continued to use same strategy repeatedly even when it was not effective, as in unsuccessfully attempting to decode a word over and over. In contrast, high students often were clearly flexible in their strategies, such as a girl who chose a picture prompt she could write a lot about rather than the one that first got her attention (F6H). When reading, the same student frequently verified or modified earlier predictions about the story as she got more information from the text.

Another difference between effective and less effective performance on second language reading and writing tasks was that less effective learners got bogged down by details, whereas more-effective learners focused more on the task as a whole. A specific example is when low students got stuck on decoding or trying to spell an individual word. Some students spent a lot

BEST COPY AVAILABLE

of time trying to decode words or listing words they didn't know rather than focusing on what the text means based on parts they did understand. For example, after sounding out several words, a student (S2L) reported, "I am thinking how the words are said." The same student said he thinks in English "when there are words that I know, but I don't know how you can say (them)." Although decoding can be an excellent strategy to unlock the meaning of a word, less effective students often persisted in laborious decoding of a word, not trying anything else or even skipping over a word that had them visibly frustrated. This qualitative comparison was supported by the quantitative finding that low-rated students relied on decoding more than any other strategy (41% of their strategies use).

In contrast, more-effective students seemed more comfortable guessing or skipping some individual words. Although they sometimes decoded words, they relied much more on other strategies, especially using their background knowledge and making inferences. High-rated students also seemed most concerned with the overall meaning:

J5H: I don't understand 'no fushigi' or fushigi', and if I read this *[referring to main text]* I'll understand.

A final potential difference is that effective students may make more relevant and more extensive elaborations about text. For example, one low student had received a pog as a prize for completing a previous task. The pog was put away, and the interviewer put a story in front of the student. Pointing to the text, the interviewer asked, "What are you thinking?"

F1L: I think...I think...I like pogs.

I: But what are you thinking when you look at this text?

F1L: I think that there are no flowers.

BEST COPY AVAILABLE

Later the interviewer says: You began to say 'beh' and all that. What are you doing in your head?

F1L: Um...I...I dance....I fly.

(Later, the interviewer asks when the S thinks in English and when in French.)

F1L: I like....I like....how do you say peanut butter in French? Peanut butter and jelly. I eat, I eat when I speak in French.

In contrast, high-rated students made many relevant elaborations, often in rich detail:

I: What are you thinking about at this moment, before starting to read?

S2H: *[Examines picture]* That this story could be a fantasy.... Because I think that the story is going to be very funny and things are going to happen that can't happen.

J5H: [The man is] a little strange...because he always carries the umbrella. ...He must really like the umbrella.... When it rains, he runs without using the umbrella even though he gets wet..... The umbrella must be really precious.

Conclusions

The findings to date on the study of learning strategies of language immersion students provide insights into the language learning processes of elementary school students as they use a foreign language as the medium for acquiring new information and skills. The degree to which many of these young learners could describe their own thinking and learning processes seems to indicate that metacognitive awareness begins at quite an early age. Based on both quantitative

BEST COPY AVAILABLE

and qualitative analyses of the data we have gathered so far, the following conclusions have emerged:

- Students as young as grade 1 are often able to describe thinking in rich detail, often in L2.
- Students often have thoughtful, detailed responses about when and why they think in L2 or in L1.
- Students use an extensive set of strategies and processes, applicable across grades and languages.
- Good learners may better monitor & adapt strategies, whereas poor learners cling to ineffective strategies. Effective students recognized the need for flexibility to accomplish the tasks, and they were more flexible in their strategies use.
- Less-effective learners may get bogged down by details, whereas more-effective learners focus on the task as a whole. Low-rated students relied more on phonetic decoding than any other strategy, but high-rated students focused more on using background knowledge and inferencing to understand text.
- Effective students may make more relevant and more extensive elaborations.

Further analyses of data collected from the final year of the study will provide additional information about how children's strategies change over time, the relationship between children's use of strategies and their perceptions of efficacy as language learners, and any differences in strategy use across the languages studied. Descriptions of the strategic processing of children in foreign language immersion classrooms can provide teachers with insights into the untutored strategies used by more and less successful language learners. Moreover, the identification of

learning strategies at different ages and for three different languages can provide a basis for developing and integrating strategies instruction into elementary language immersion programs.

Acknowledgments

Members of the research team at the Georgetown University/Center for Applied Linguistics National Foreign Language Resource Center are making this research effort possible. We would like to express our thanks and admiration for the expertise, insights, and dedication of Sarah Barnhardt, Catherine Keatley, Koichi Nagano, and Christine Newman.

BEST COPY AVAILABLE

References

Bernhardt, E. B. (Ed.) (1992). Life in language immersion classrooms. Bristol, PA: Multilingual Matters.

Campbell, R. N. (1984). The immersion approach to foreign language teaching. In Studies on immersion education: A collection for United States Educators, 114-143. Sacramento CA: California State Department of Education.

Chamot, A. U. (1993). Student responses to learning strategy instruction in the foreign language classroom. Foreign Language Annals, 26(3), 308-321.

Chamot, A. U., & Küpper, L. (1989). Learning strategies in foreign language instruction. Foreign Language Annals, 22(1): 13-24.

Chamot, A. U., Barnhardt, S., El-Dinary, P. B., Carbonaro, G., & Robbins, J. (1993). Methods for teaching learning strategies in the foreign language classroom and assessment of language skills for instruction: Final report. Available from ERIC Clearinghouse on Languages and Linguistics.

Chamot, A. U., Robbins, J., & El-Dinary, P. B. (1993). Learning strategies in Japanese foreign language instruction. Final Report. Available from ERIC Clearinghouse on Languages and Linguistics.

Cohen, A. D., & Aphek, E. (1981). Easifying second language learning. Studies in second language learning, 3:221-36.

Curtain, H. A., & Pesola, C. A. (1988). Languages and children - Making the match. Reading, MA: Addison-Wesley.

Genesee, F. (1987). Learning through two languages. Rowley, Ma: Newbury House.

Hosenfeld, C., Arnold, V., Kirchofer, J., Laciura, J., & Wilson, L. (1981). Second language reading: A curricular sequence for teaching reading strategies. Foreign Language Annals, 14, 415-422.

Lambert, W. E., & Tucker, G. R. (1972). Bilingual education of children: The St. Lambert experiment. Rowley, MA: Newbury House.

Met, M. & Galloway, V (1992). Research in foreign language curriculum. In Philip Jackson, (ed.), Handbook of research on curriculum. New York: Macmillan, pp. 852-890.

BEST COPY AVAILABLE

Naiman, N., Fröhlich, M., Stern, H. H., & Todesco, A., (1978). The good language learner. Toronto: Ontario Institute for Studies in Education.

O'Malley, J. M., & Chamot, A. U. (1990). Learning strategies in second language acquisition. Cambridge, England: Cambridge University Press.

O'Malley, J. M., Chamot, A. U., Stewner-Manzanares, G., Küpper, L., & Russo, R. P. (1985a). Learning strategies utilized in listening and speaking skills in English as a second language. Language Learning, 35(1).

O'Malley, J. M., Chamot, A. U., Stewner-Manzanares, G., Küpper, L., & Russo, R. P. (1985b). Learning strategy applications with students of English as a second language. TESOL Quarterly, 19(3).

Oxford, R. (1990). Language learning strategies. New York: Newbury House.

Padrón, Y. N. & Waxman, H. C. (1988). The effects of ESL students' perceptions of their cognitive strategies on reading achievement. TESOL Quarterly, 22: 146-150.

Pressley, M., & El-Dinary, P. B. (1993). Introduction (Special issue on strategies instruction). *Elementary School Journal, 94*.

Pressley, M., El-Dinary, P. B., Gaskins, I., Schuder, T., Bergman, J. L., Almasi, J., & Brown, R. (1992). Beyond direct explanation: Transactional instruction of reading comprehension strategies. Elementary School Journal, 92(5), 513-555.

Rubin, J. (1975). What the "good language learner" can teach us. TESOL Quarterly, 9, 41-51.

Rubin, J., Quinn, J., & Enos, J. (1988). Improving foreign language listening comprehension. Report to U.S. Department of Education, International Research and Studies Program.

Strauss, A. L., & Corbin, J. 1990. Basics of qualitative research: Grounded theory procedures and techniques. Beverly Hills: Sage Publications.

Swain, M. (1984). A review of immersion education in Canada: Research and evaluation studies. In Studies on immersion education: A collection for United States Educators, 114-143. Sacramento CA: California State Department of Education.

Thompson, I., & Rubin, J. (1993). Improving listening comprehension in Russian. Report to International Research and Studies Program. U.S. Department of Education. Washington, DC.

BEST COPY AVAILABLE

Weinstein, C. E., and Mayer, R. E. (1986). The teaching of learning strategies. In M. R. Wittrock (Ed.), Handbook of research on teaching (third Ed.), pp. 315-27. New York: Macmilla

Appendix A

Coding Reference/Index

(Numbers at left indicate "level" of each category in the hierarchy.)

1 *METACOGNITIVE STRATEGIES*

2 PLAN

3 **Prev**iew
- 4 **Prev genre/org**anizing principle
- 4 **Prev main** idea/topic

3 **Org**anizational planning
- 4 **Sec**tions
- 4 **Aid** organizational aid (web, list; unprompted only)

3 **Self-man**agement
- 4 **know** ☞ (- chooses topic knows little about)
  - 5 **know L2** selects topic because knows L2
  - 5 **know topic /interest**
- 4 **DA** [Directed Attention]
- 4 **RA** read aloud/whisper for a purpose
- 4 **Self-cue**
- 4 **Repeat pattern**
- 4 **Avoid** what I don't know how to say; change topic
- 4 **Rh** Rehearsal ("lip"/think words before saying)

[METACOGNITIVE & COGN.; count as metacog.]

2 SA SELECTIVE ATTENTION

3 **SAknwd** (to known words)
3 **SAkey** (important words)
3 **SAtitle**
3 **SApic**ture
3 **SA#** (numeral)
3 **SAling** linguistic features/word endings/ specific part of speech/ grammatical correctness
3 **SApron**unciation
3 **Skip**
- 4 **Skip LB**
- 4 **Skip NI**

3 **Reread** [no disagreement w/ Look back]

2 MONITOR

3 **Strat** +/- [Monitor current strategy use]
3 **Msense** [note whether what is being read/said/written makes sense]
- 4 **Msense+** [Makes sense; I understand.]
- 4 **Msense-** [Doesn't make sense.]

3 **Aud mon** auditory monitoring [sounds right/wrong]
3 **Ver**ify Confirm/change an inference, prediction, cognate meaning [revising an inference by making a new one codes as both Ver and I]
3 **SC** Self-correct errors/perceived errors
3 **SQ/QVer** [self-questioning/ hypothesizing answer & asking interviewer if correct]

BEST COPY AVAILABLE

4 Look back

1 *COGNITIVE STRATEGIES*

2 CONNECT W/ BACKGROUND KNOWLEDGE TO MAKE MEANING

3 ☞ Inference [I- if incorrect; count I- separately]
- 4 Ititle
- 4 Ipic
- 4 I#
- 4 Iknwds
- 4 Itext
- 4 Ilit/med
- 4 Iwrld

3 Predict (based on:)
- 4 **Pred** based on **title**
- 4 **Pred** picture
- 4 **Pred #** (numeral)
- 4 **Pred knwds** (known words)
- 4 **Pred text** (context)
- 4 **Pred lit/med** (literature/media)
- 4 **Pred wrld** (general world knowledge)

3 ☞Elaborate [elab- if irrelevant; count separately]
- 4 **Elab pers** [personal experience, judgment, emotional response to text]
- 4 **Elab txt** [connection between parts of text]
- 4 **Elab pic** [talk about pictures]
- 4 **Elab class** [talk about specific class activity]
- 4 **Elab wrld** [observations ab. world situations]
- 4 **Elab lit/med** [connect to literary/media kn.]
- 4 **Vispic** [image: object/scene]
- 4 **Role** [imagining self in story]

2 USE SPECIFIC LANGUAGE KNOWLEDGE TO SOLVE PROBLEMS

3 L2 knowledge
- 4 **Deduction**
- 4 **Decoding** [each word S tries to decode]
  - 5 **Dec-mn** [mental decoding]
  - 5 **DecCharacter** [recognition/pronunciation]
- 4 **Semantic** awareness [alternative meanings; connotations]
- 4 **Substitute**

3 L1-L2 knowledge
- 4 **Cognates**
- 4 **Borrow** modify/accent L1 word to fit L2; make up word
- 4 **Mix** go back and forth from L2 to L1 words [imm writing; HS speaking]

2 MANIPULATE INFORMATION

3 Retell

3 Summarize

3 Translate (- if clearly incorrect)
- 4 **Metatranslation**

2 RESOURCE [computer, text, own notes, video/audio, task info]

3 Dictionary

3 Chart [e.g., hiragana]

3 QI Question for information that is unknown or for general help--spelling, word meaning, translation

2 RECALL STRATEGIES

3 Sequence [think through memorized sequence]

3 Association -- Sound associations

3 Brainstorm L2 Vocab (writing/speaking)

3 Viswd/char visualize word or character

3 Aud recall hear words/say aloud to retrieve meaning

BEST COPY AVAILABLE

1 *METACOGNITIVE AWARENESS*

Includes general awareness of task requirements or how one is approaching task

[No level 2 here]

3 Automatic understanding in L2; don't need to translate

3 Easy / Hard [Assess task difficulty]

3 Tie to L1/L2 [Relate to L1 or another L2]

4 Contrast L1/L2

4 Interference of L1 or another L2

3 Why [strategy value]

4 When [conditional knowledge of when strategy is more useful or less useful]

3 ☛ Self awareness **(+/-/0)** [comments on own ability; not directly tied to how performing task (compare Monitor)]

3 ☛ Affect (state whether + or -) emotional reaction to doing task

Ⓟ *PLANNED PROBES FOR IMMERSION STUDENTS*

READING

What do you do when you don't know a word you are reading in L2?

What language are you thinking in when you read in L2?

WRITING

What do you do when you want to write a word you don't know in L2?

How do you know how to spell/write words in L2?

What language are you thinking in when you write in L2?

COGNITIVE STRATEGIES	
MAKE CONNECTIONS WITH BACKGROUND KNOWLEDGE TO MAKE MEANING	
STRATEGY DEFINITIONS	**IMMERSION STUDENT EXAMPLES**
Inference: Pulling together elements not stated in text. Guessing based on some information; not just wild guessing. **Ititle** Infer based on title **Ipic** based on picture **I#** (text-specific) **Iknwds** Take words I recognize in the text & try to make sense w/ those I don't know; if using strategy (not just describing it), must indicate which words inference is based on. **Itext** context clues and text-based inferences from other parts of the same text **Ilit/med** inference based on literary knowledge; knowledge from media (TV, movie, song...) **Iwrld** World knowledge about topic/content, as well as logic, common sense.	**Iknwds** I don't know what that word means. (xxx) kuro was black. I: Un. S: He was all dressed in black? **Itext** S: Rippana (fine) I don't know what that word means. Kasa wo motte imashita (had an umbrella). Maybe he takes it to like a store or something? I don't know rippana. I: Why did you think that? S: Um...I don't know but maybe he was like, they are telling about how many, like the grandfather like loves his umbrella so much and takes it everywhere or something.// **Ipic** S: ...I"m trying to think about that picture. What is he doing?... Like put the umbrella? It looks like he's trying to not anybody take it. **Iwrld** S: (I knew it but when the alarm clock says ring ring, that says that, because the alarm clock rings ring ring in the morning)

Pred Predict
What's next? What kinds of information am I likely to get later? [Distinction between inference & prediction-- inference as educated guess about meaning; prediction as educated guess about information that will follow (after predicting, student would continue reading or looking for meaning, ideally checking if prediction is correct).]
Pred title
Pred pic (picture)
Pred # (numeral)
Pred knwds (known words)
Pred text
Pred lit/med (literary or media)
Pred wrld
	Pred I: (First, before reading, what are you thinking, before beginning to read?) S:(That this story...may be fantasy) I: (It may be fantasy? Why do you say this?) S:(Because I think the story is going to be very funny and things are going to happen that can't possibly happen.)//
	I: (Before reading what are you thinking when you see...Here is the story; what are you thinking?) S: ¿Qué es el cuento? (What is the story about?)//
	I: Are you thinking anything now? S:(a thief). I:(A thief? OK. Why is that?) S: (Because those who wear black clothes are mostly thieves). [could be based on picture and/or word black in text.]
	Pred pic
	S: Looks like everybody's getting hurt in the picture, so it might be everybody's getting hurt in this story

BEST COPY AVAILABLE

Appendix B

Sample Tally Sheet for Recording Strategy Codes

CODERS: CK/PBE SAMPLE STUDENT: LANG: GRADE:
DATE TALLIED: TRANSCRIPT YEAR: TEACHER. SCHOOL:

READING

A Agree	R^2 Resolved within Level 2	RD Resolved Discrepancy	X Resolved--Excluded	U Unresolved
predpic ///				
Pam & Cathy agreed on 3 predictions based on pictures. When we found the first case, we marked it predpic /, adding additional tallies as more cases came up.				
	Itxt /// (I //) (Iknwds /)			
In 2 cases, Pam had I but Cathy had Itxt. In 1 case, Cathy had I knwds but Pam had Itxt. In all 3 cases, the final decision was Itxt. The original disagreeing codes were in the same level 2 category, Inference.				
	viswd / (recall /)			
1 case where Pam had recall and Cathy had viswd (a subcategory of recall). In this case, we were able to agree at the more specific level after looking at the case for a couple of minutes.				
	selfman / (kntop /)			
One of us had selfman, the other had kntop. In this case, we decided the information wasn't clear enough to support kntop, so we went with the more general superordinate category. Our codes were in the same level 2 category (Plan).				
		contrast L1/L2 (⊘)		
Cathy had coded the episode contrast L1/L2. Pam did not have anything coded on that part of the transcript. Pam thought the student's comment was too vague to be meaningful (not clear enough to tell what the student meant), but Cathy still thought it was clear. Although Pam could still not clearly justify the coding, she deferred to Cathy's knowledge of the context (as the interviewer, she could recall the students' tone of voice, facial expressions, etc.)				
			Elab pic	
Cathy had coded the episode elabpic. Pam did not have anything coded on that part of the transcript and thought this was not a clear enough case of elaboration. After a brief discussion, we agreed to leave the episode out.				
		decode / (SC)		
One of us had decode, the other had self-correct, after reviewing the coding rules, we saw that corrections made as part of decoding should count as decoding, unless the change was between two meanings.				
				SApic/Elab pic
We have not yet had any unresolved discrepancies, but this could be an example, if after 5 minutes we still disagree or can't make a clear-cut distinction between SApic and Elabpic. If we had a solution within 5-minutes, this would be a resolved discrepancy (RD).				

BEST COPY AVAILABLE

Appendix C

Descriptive Profile

RESPONSES TO PROBES: IMMERSION ONLY

CODER(S): STUDENT: SCHOOL:
LANGUAGE: TEACHER:
GRADE/LEVEL:
DATE CODED: YEAR OF TRANSCRIPT:

READING

What do you do when you don't know a word you are reading in L2?

- Guess from context
- Guess from similar words in L2
- Try cognate
- Evaluate importance
- Skip
- Dictionary
- Ask teacher
- Ask others
- Other strategies mentioned:

_____

_____

Total # Alternatives produced by S: _____

What language are you thinking in when you read in L2?

- all L2
- all English
- Mix (Description of when English, when L2):
  - Use English when I think about an L2 word I don't know
  - Other description of when L1/L2:

_____

_____

- Another language
- No language
- Other explanation: _____

_____

WRITING

What do you do when you want to write a word you don't know in L2? [Anything else?]

- Say it another way in L2
- Try cognate--hope it's a word
- Skip the idea
- Dictionary
- Ask teacher
- Ask others
- Other strategies mentioned: _____

_____

Total # Alternatives produced by S: _____

How do you know how to spell/write words in L2?

- Just know
- See them in my mind
- Sound out
- Use chart
- Others mentioned: _____

_____

Total # Alternatives produced by S: _____

What language are you thinking in when you write in L2?

- all L2
- all English
- Mix (Description of when English, when L2):
  - Make up story in L1
  - Make up story in L2
  - Make up story in mix (explain)
  - Think in L1 when writing words
  - Think in L2 when writing words
  - Think in mix when writing words (explain)
  - Other description/ additional explanation:

_____

_____

- Another language
- No language
- Other explanation: _____

_____

GENERAL INFORMATION/GLOBAL IMPRESSIONS

CODER(S): STUDENT: SCHOOL:
LANGUAGE: TEACHER:
DATE CODED: GRADE/LEVEL: YEAR OF TRANSCRIPT:

Compared to other students in this group (language/grade/level), rate this student's

[Write N/A if Not Applicable]

General verbosity: High____ Medium____ Low____

IMM--Overall ability to communicate in L2: High____ Medium____ Low____
IMM--Overall ability to use L2 correctly orally: High____ Medium____ Low____

Overall metacognitive awareness: High____ Medium____ Low____
Overall appropriateness of strategies use: High____ Medium____ Low____

Overall length/content quality of L2 production: High____ Medium____ Low____
(HS speaking task; imm writing task)
Overall correctness of L2 production: High____ Medium____ Low____
Overall writing and spelling skill: High____ Medium____ Low____

Reading ability in L2: High____ Medium____ Low____
Which level(s) of text did the student read (if unsure, list titles)? _____
For the student, the text was: Easy____ Medium____ Hard ____

Which of the following did the student tend to do when reading?

____ Translate verbatim, word-by-word
____ Translate verbatim, a phrase or sentence at a time
____ Translate verbatim, several sentences or paragraphs at a time
____ Paraphrase most of what was read
____ Paraphrase selected parts, not necessarily main ideas
____ Summarize main points

____ Read silently
____ Read aloud
____ Whisper words

Prompting (check any that apply):

____ Responded without being prompted
____ Responded with moderate prompting
____ Responded only when heavily prompted
____ Did not respond to heavy prompting

___ Described thoughts in rich detail
___ Described thoughts; little detail
___ Responded but didn't describe thoughts
___ Minimal responses ("Yes/No, I don't know, nothing")

Especially unique strategies:

Clearly inappropriate strategies:

Strategies S talks a lot about but does not seem to use in the task:

Creative content/rhetorical devices in production task:

Anything that seems to distinguish this student as High/Low or more/less mature):